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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,208	10/29/2003	Jay R. Walton	010454D1	7298

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QUALCOMM INCORPORATED
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EXAMINER	
MACK, SYLVIA	
ART UNIT	**PAPER NUMBER**
2617	

NOTIFICATION DATE	DELIVERY MODE
08/27/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/696,208	WALTON ET AL.	
	Examiner	Art Unit	
	Sylvia Mack	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 8, 12, 13, 15 – 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (US Pat. 5,870,378) henceforth Huang.

Regarding claims 1, 12, 13, and 20, Huang teaches a multiple-access OFDM-CDMA system, a method, and an apparatus for recovering data transmitted over a wireless communication channel (Abstract, col. 1, lines 23 – 35, col. 3, lines 23 – 36, Fig. 1), comprising:

Receiver, a means for processing a received signal to provide data samples (col. 1, lines 61 – 65, col. 2 lines 1 – 13, col. 4, lines 45 – 54, Fig. 4);

A means for decovering the data samples with a cover code to provide decovered samples (Pilot PN sequence generator 1121 and Multi-code Walsh generator 1212 to using a PN sequence (cover code) and Walsh code (cover code) to recover (decover) data signals (data samples) [Abstract, col. 10, lines 42 –52, Fig. 12]);

Transformer, a means transforming the data samples in accordance with a particular transformation to provide transformed samples (Fast Walsh-Hadamard Transformation Unit - FWHT 904 (transformer) for transforming data channel signals (data samples) [col. 2, lines 6 – 13, lines 28 – 30, col. 9, lines 7 – 25, Fig. 9]);

Despreader, a means for despreading the transformed samples with one or more sets of despreading coefficients to provide despread samples, wherein each set of despreading coefficients is associated with a respective despreading code that corresponds to a spreading code used to spread data prior to transmission and selected from a set of available spreading codes (Pilot despreader 1201 and a Wash despreader 1202 work in conjunction to despread the transformed data signals using one or more Walsh codes and/or PN sequence (despreading codes) (col. 2, lines 19 – 21, col. 10, lines 32 – 64, Fig. 12) that corresponds to a code spreader 205, within a transmitter, that spreads the data signal using a Walsh code prior to transmission. A Walsh code pilot signal is added, at the transmitter, for signal detection at the receiver [col. 3 lines 55 – 63, Fig. 2]. At the receiver, a detection strategy used in lieu of despreading coefficients, a finger unit 508 functions as pilot searchers to detect Walsh pilot signals to facilitate the recover of data signal(s) [col. 5, lines 25 – 36, Fig. 5]).

Summer, a means for combining the despread samples for each time interval to provide a demodulated symbol representative of a transmitted OFDM symbol (Accumulator (summer) 802 for summing the data to provide demodulated symbol [col. 2, lines 21 – 31, col. 9, lines 7 – 14, Fig. 9]); and

RX data processor, a means for decoding demodulated symbols to provide decoded data (Digital signal processor 409 (RX data processor) decodes and despreads received signal to provide "output data signals" 410 (decoded data) [col. 4, lines 45 – 61, Fig. 4]).

Regarding claim 2, as applied to claim 1, Huang further discloses decovering the data samples with a cover code to provide decovered samples, wherein the transforming is performed on the decovered samples (Pilot PN sequence generator 1121 and Multi-code Walsh generator 1212 to using a PN sequence (cover code) and Walsh code (cover code) to uncover data signals [col. 10, lines 42 –52, Fig. 12]).

Regarding claim 5, as applied to claim 1, Huang further discloses combining demodulated symbols derived from a plurality of received signals to provide combined demodulated symbols [col. 2, lines 21 – 31, col. 9, lines 7 – 14, Fig. 9].

Regarding claims 6 and 17, as applied to claims 5 and 16, Huang further disclose the plurality of received signals are transmitted from a plurality of cells or sectors in the system (col. 3, lines 23 – 35).

Regarding claims 7 and 8, as applied to claim 1, Huang discloses comprising: estimating a response for the communication channel, and wherein each set of despreading coefficients is derived based in part on a set of weights indicative of the estimated channel response and the channel response is estimated based on a pilot included in the received signal (Channel weighting function determines channel estimate derived from the pilot included in the received signal. [col. 4, lines 54 –61, col. 9, lines 27 – 41]). A Walsh code pilot signal is added, at the transmitter, for signal detection at the receiver [col. 3 lines 55 – 63, Fig. 2]. At the receiver, a detection strategy used in lieu of despreading coefficients, a finger unit 508 functions as pilot searchers to detect Walsh pilot signals to facilitate the recover of data signal(s) [col. 5, lines 25 – 36, Fig. 5]).

Regarding claim 15, as applied to claim 13, Huang further discloses a multiplier operative to decover the data samples with a cover code to provide decovered samples, wherein the transformer is operative to transform the decovered samples (Multipliers 808, 811, 814 used in the multiplication of recovered (decovered) data signals [col. 9, lines 7 – 25, Fig. 9]).

Regarding claim 16, as applied to claim 13, Huang further discloses a second summer operative to combine demodulated symbols derived from a plurality of received signals to provide combined demodulated symbols (Multiple accumulators (summers) for combining demodulated symbols from multiple received signals [804, 807, 810, 813, Fig.8]).

Regarding claims 18 and 19, as applied to claim 13, Huang further discloses a base station and a terminal comprising the receiver unit of claim 13 (col. 4, lines 45 –48, Fig. 1, Fig. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US Pat. 5,870,378), henceforth Huang, in view of Agee et al. (US Pub. 2004/0095907) henceforth Agee.

Regarding claims 3, 4, and 14, Huang teaches the limitations of claims 1 and 13, but does not teach a buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches a buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol (Transceiver, a device that comprises both a transmitter and receiver, consist of buffer for "stripping off" (discarding) added cyclic prefixes (pages 24 - 25, paragraphs [0270] – [0271], page 26, paragraph [0282], page 32, paragraph [0392])).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Huang to incorporate a buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbols as taught by Agee to provide a means for removing the cyclic prefix that is added to a radio signal in order to avoid reception problems that

may occur in a multi-path environment (page 25, paragraph [0271], page 26, paragraph [0282]).

Regarding claim 4, applied to claim 1, Huang teaches the transformation is a Fast Walsh-Hadamard Transformation (col. 2, lines 6 – 13) but does not teach the transformation is a Fourier transform. Agee teaches the transformation is a Fourier transform (pages 25 - 26, paragraphs [0270] - [0271]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Huang to incorporate the transformation is a Fourier transform as taught by Agee to provide adaptive arrays with synergistic blend, eliminate feedback, and simplify the equalization process (page 25, paragraph [0271], page 26, paragraph [0282]).

Claims 9 – 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US Pat. 5,870,378), henceforth Huang, in view of Brink et al. (US Pat. 6,038,450) henceforth Brink.

Regarding claims 9, 10, and 11, as applied to claim 1, Huang teaches a pilot is added to the transmitted signal received by the receiver and the pilot channel carrying the pilot signal is used to obtain the channel estimate from which energy or power measurement is determined (col. 9, lines 27 – 40, col. 11, lines 65 – 67, col. 12, lines 1 – 5). However, Huang does not teach estimating a quality of the received signal, transmitting power control commands derived based on the estimated received signal quality, and the receive signal quality is estimated based on the pilot included in the received signal and/or the demodulated symbols. Brink teaches teach estimating a

quality of the received signal, transmitting power control commands derived based on the estimated received signal quality, and the receive signal quality is estimated based on the pilot included in the received signal and/or the demodulated symbols (Determination of the signal quality of a received signal can be derived from the pilot symbols or demodulated symbols. Power measurements that are derived from the signal quality measurements are useful in to determine the necessary power levels and the instructions needed to facilitate effective communication [col. 5, lines 61-67, col. 6, lines 1 –13, lines 38 – 60, col. 9, lines 46 – 58]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Huang to incorporate estimating a quality of the received signal, transmitting power control commands derived based on the estimated received signal quality, and the receive signal quality is estimated based on the pilot included in the received signal and/or the demodulated symbols as taught by Brink because all the above factors relating to received signal quality are essential components necessary for effective and efficient communication between a base station and a mobile terminal (col. 9, lines 36 – 58).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia Mack whose telephone number is (571) 270-1212. The examiner can normally be reached Monday – Friday from 8:00 am to 5pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Signature: Sylvia Mack
Sylvia Mack
Examiner / Art Unit 2617

LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER